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Muenchener Medic. Wochenschr. 53: 1351, 1906.

Contributions to the Technique of Agglutination-tests. Beitrag zur Agglutinationstechnik, by M. Gaehtgens

In particular cases for the treatment of diseases which are suspected to be typhus, for example on differential diagnostic bases, the greatest possible speed in accomplishment of the agglutination-reaction is a great desideratum. Through the following simple method, the details of which will be published in the "Arbeiten aus den kaiserlichen Gesundheitsamte," the duration of observation will be shortened, so that after only 10 minutes one can have positive knowledge of the properties of the serum.

A tube is prepared in the usual manner with the patients serum, physiological saline and bacterial-suspension, while a second saline and bacterial suspension serves as control. Both tubes are centrifuged 10 minutes, afterwards thoroughly examined, 3-4 times shaken to uniformity, and thereupon examined once more both microscopically and macroscopically.

In the control tube after the centrifuging a vanishingly small part of the bacteria are centrifuged-out, this part being visible as a sharply defined mass of sediment about 2 mm. in diameter. After 3-4 timed shaking, this mass is completely dispersed, so that microscopically, in hanging drops, only single bacteria, or here and there clumps of 2 or 3 bacteria, are visible. The same conformation can be seen in the serum-tube, if the reaction is negative.

In the serum tube with positive reaction a part of the bacteria gather at the bottom of the tube as sediment, around which in a characteristic way the bacilli arrange themselves, united as a flocculum in which they, depending on the agglutination-strength of the serum, form small point-like flecks, or a single mass

which exceeds the size of the mass of sediment of the control tube by two or three times. After shaking, most of the macroscopically visible floccules settle back to the bottom. Only in the case of a low-value serum, in which, for example, the bacteria agglutinate only after five hours, do the floccules dissipate upon shaking, and these again are detectible upon microscopic examination.

In the microscopic examination it is strictly to be noted that only small clumps, which after superficial examination can be seen to consist of at least 10 individuals, can be taken to indicate a positive reaction.

Moreover, a large number of such clumps must be visible in the drops, whose volume and size depends naturally on the agglutination-strength of the serum.

I have used this method in more than 100 agglutination-tests, of which about half were negative, and half positive. For comparison, all the sera were tested also in the "old" manner (by my co-assistant Dr. Fornet, whom I thank), in which the tubes were held for 4 to 5 hours at 37 degrees C and eventally still longer 12 hours at room temperature. The very same results were obtained in the two series.